



INDIANA DEPARTMENT OF TRANSPORTATION

STANDARDS COMMITTEE MEETING

Driving Indiana's Economic Growth

FINAL AGENDA

April 10, 2008

MEMORANDUM

TO: Standards Committee

FROM: Mike Milligan, Secretary

RE: Agenda for the April 17, 2008 Standards Committee Meeting

A Standards Committee meeting is scheduled for 9:00 a.m. on April 17, 2008 in the N755 Bay Window Conference Room. Please enter the meeting through the double doors directly in front of the conference room. The following agenda items are listed for consideration.

Page No.

A. GENERAL BUSINESS ITEMS

OLD BUSINESS

(No items on this agenda)

NEW BUSINESS

1. Approval of March 20, 2008 Minutes
2. Formation of 205 Sub-committee
3. Update report from Document Management Committee

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B. CONCEPTUAL PROPOSAL ITEMS

OLD BUSINESS

(No items on this agenda)

NEW BUSINESS

- | | |
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| 1. 701 Driven Piling Specifications | 4 |
| 2. QC/QA HMA Smoothness Pay Factor Issues | 5 |
| 3. Standardization of Terminology - Reinforcing Bars and Reinforcing Steel | 6 |

C. RECURRING SPECIAL PROVISIONS PROPOSED ITEMS

(No items on this agenda)

D. STANDARD SPECIFICATIONS AND STANDARD DRAWINGS PROPOSED ITEMS

OLD BUSINESS

(No items on this agenda)

NEW BUSINESS

<u>Item No.</u>	<u>Sponsor</u>	
Item 08-9-1 619 <u>REVISED</u>	Mr. Kuchler PAINTING BRIDGE STEEL	8
Item 08-9-2 628-R-XXX <u>REVISED</u>	Mr. Heustis FIELD OFFICE, FIELD LABORATORY, COMPUTER SYSTEMS AND OFFICE MACHINES	30
Item 08-9-3 714-R-XXX <u>REVISED</u>	Ms. Rearick CONCRETE BOX STRUCTURES	43
Item 08-9-4 Standard Drawings	Ms. Rearick 714-BCEX-01 and 02	53

cc: Committee Members (11)
FHWA (1)

A. GENERAL BUSINESS ITEMS

2. FORMATION OF 205 SUB-COMMITTEE

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: The 205 section has not been revised for several years. Since that time many changes have taken place in the field of erosion control. Numerous new products are now available that are effective and should be considered to be allowed and/or required for use by INDOT contractors.

PROPOSED SOLUTION: Several Items/Methods to be considered by the subcommittee:

- Polyacrylamide (PAM) for slope stabilization
- Filter Bags for use in dewatering operations
- Manufactured Inlet filters
- Contractor's responsibility for updated erosion control plan
- Contractor's responsibility for sediment control
- Pay items

Suggested members:

- Tom Harris, Field Engineer
- Nathan Saxe, Environmental Services
- Todd Tracy, Materials Management
- Michele Allen, Environmental Services
- Rich Phillabaum, Environmental Services
- IDEM Representative
- IDNR Representative
- Terry Noriega, Drainage Solutions, Inc. Vender/Manufacture
- Contractor

APPLICABLE STANDARD SPECIFICATIONS: Section 205, portions of Section 108

APPLICABLE STANDARD DRAWINGS: Potential to affect all of the E-205-XXXX standard drawings

APPLICABLE DESIGN MANUAL SECTION: Part 4, Chapter 37

APPLICABLE SECTION OF GIFE: Current GIFE covers erosion control in Section 51

APPLICABLE RECURRING SPECIAL PROVISIONS: 108-C-192

Submitted By: Tom Harris

Title: Field Engineer, Division of Construction Management

Organization: INDOT

Phone Number: 317-232-4910

Date: March 20, 2008

APPLICABLE SUB-COMMITTEE ENDORSEMENT?

Mr. Miller
Date: 4/17/08

B. CONCEPTUAL PROPOSAL ITEMS

1. 701 DRIVEN PILING SPECIFICATIONS

CONCEPTUAL
PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: Portions of the 701 Driven Piling specification are outdated.

PROPOSED SOLUTION: Industry has approached the INDOT Office of Geotechnical Engineering and requested that INDOT consider revising and updating the pile driving specification to reflect a growth in knowledge of techniques and technology upgrades and advancements. The last thorough review on this specification was 12 years ago. This specification also needs to be updated to incorporate LRFD requirements.

APPLICABLE STANDARD SPECIFICATIONS: 701

APPLICABLE STANDARD DRAWINGS: TBD

APPLICABLE DESIGN MANUAL SECTION: TBD

APPLICABLE SECTION OF GIFE: new GIFE section 701

APPLICABLE RECURRING SPECIAL PROVISIONS: TBD

Submitted By: Ron Heustis

Title: Manager, Office of Construction Technical Support

Organization: INDOT

Phone Number: 317-234-2777

Date: March 19, 2008

APPLICABLE SUB-COMMITTEE ENDORSEMENT? TBD

B. CONCEPTUAL PROPOSAL ITEMS

2. QC/QA HMA SMOOTHNESS PAY FACTOR ISSUES

CONCEPTUAL
PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: Currently, 401.09(c) does not clearly identify which cross section elements should be included in calculation of Q_c/Q_A HMA pavement pay factors. As a result, the specification is not applied consistently and differing interpretations result in conflict in the field.

PROPOSED SOLUTION: Provide guidance to specification subcommittee on development of a revised specification to clearly identify which cross-sectional elements are to be considered for pay factor under 401.09(c). Clarify specification to avoid inconsistent interpretation.

APPLICABLE STANDARD SPECIFICATIONS: 401.18, 401.19

APPLICABLE STANDARD DRAWINGS: None

APPLICABLE DESIGN MANUAL SECTION: Chapter 52

APPLICABLE SECTION OF GIFE: 8-17, 13-20, 13-23, New GIFE Section 401

APPLICABLE RECURRING SPECIAL PROVISIONS TBD

Submitted By: Ron Heustis

Title: Manager, Office of Construction Technical Support

Organization: INDOT

Phone Number: 317-234-2777

Date: March 20, 2008

APPLICABLE SUB-COMMITTEE ENDORSEMENT? TBD

B. CONCEPTUAL PROPOSAL ITEMS

3. STANDARDIZATION OF TERMINOLOGY - REINFORCING BARS AND REINFORCING STEEL

CONCEPTUAL
PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: Currently the INDOT specifications reference both "reinforcing bars" and "reinforcing steel" and has pay items for both. This is the same material and has caused confusion.

PROPOSED SOLUTION: Make a thorough editorial revision to the Standard Specifications making all references for this material "reinforcing bars". Reinforcing bars was decided upon after considering that there is already a specification for reinforcing bars (703) and a Standard Drawing for bar bending details(703-BRST-01). There are no sections for "reinforcing steel". Furthermore, steel is a material that reinforcing bars can be made from (and is identified in 910.01). INDOT continues to receive requests to use materials other than steel for reinforcing, fiber reinforced polymer being one. If another material becomes viable for use as reinforcing and the term "reinforcing bars" is used, changes to allow this other material will only need to be an additional paragraph to the 900 section. If the term "reinforcing steel" is used and another viable material becomes available, this term will no longer accurately describe the item.

APPLICABLE STANDARD SPECIFICATIONS: 101.74, 111.02, 111.09, 202.03(b), 503.08, 506.07(a), 602.02, 602.03(b), 605.02, 605.10, 607.02, 607.06, 614.02, 615.02, 701.02, 701.09(f), 701.14, 701.15(c), 702.10, 702.13(e)2, 702.20, 702.27, 702.28, 703.06, 704.01, 704.02, 704.04, 704.06, 704.07, 704.08, 705.02, 705.03, 705.04, 706.02, 706.03, 706.05, 706.06, 707.02, 707.04(a), 707.04(b), 707.04(c), 707.10, 707.12, 708.04, 710.02, 710.03(a), 710.03(b), 710.03(c), 710.07, 714.02, 714.04, 714.04(a), 714.04(b), 714.07, 714.08, 715.02, 715.10, 715.13, 715.14, 717.02, 717.03, 717.08, 717.09, 718.02, 718.09, 719.02, 720.02, 720.06, 722.05(a)2, 722.05(b), 722.06(a)1, 722.07, 723.02, 723.03, 723.04(b), 723.19, 724.05, 802.02, 802.12, 805.16, 807.03, 807.19, 910.01(a), 910.01(b)3, 910.01(c), 921.02(d)3a

APPLICABLE STANDARD DRAWINGS: None

APPLICABLE DESIGN MANUAL SECTION: None

APPLICABLE SECTION OF GIFE: None

APPLICABLE RECURRING SPECIAL PROVISIONS: None

Submitted By: Ron Heustis

Title: Manager, Office of Construction Management

Organization: INDOT

Phone Number: 317-234-2777

Date: March 19, 2008

APPLICABLE SUB-COMMITTEE ENDORSEMENT?

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: There are continued problems with painting contracts. Due to numerous reasons, INDOT does not have a good handle on whether or not a bridge has existing hazardous (lead, chromium, etc...) coatings or non-hazardous coatings. INDOT has received an increasing number of change orders for contracts that were let, advertising the existing coating as non-hazardous and when the paint sample results return from the lab, the existing coating is hazardous. This has resulted in several disagreements over price adjustments and time extensions with contractors and large change orders.

PROPOSED SOLUTION: Update the 619 section and add Pre-Established Remedies for Changed Conditions to address the three situations that may arise due to uncertainty of the existing coating type. Create a design memorandum technical advisory that notifies the designers of the pay items to be used.

APPLICABLE STANDARD SPECIFICATIONS: 619

APPLICABLE STANDARD DRAWINGS: None

APPLICABLE DESIGN MANUAL SECTION: None

APPLICABLE SECTION OF GIFE: new GIFE sections 619

APPLICABLE RECURRING SPECIAL PROVISIONS: None

Submitted By: Dennis Kuchler

Title: State Construction Engineer

Organization: INDOT

Phone Number: 317-232-5502

Date: April 9, 2008

APPLICABLE SUB-COMMITTEE ENDORSEMENT? Bridge Painting Subcommittee for the 619 rewrite.

Since there is no known industry group representing the bridge painting contractors, a meeting was held in December 2007 in which INDOT invited all of the prequalified painting contractors. The proposed changes to the 619 section were discussed with them and they were provided an opportunity to comment.

REVISION TO 2008 STANDARD SPECIFICATIONS

SECTION 619, BEGIN LINE 1, DELETE AND INSERT AS FOLLOWS:

SECTION 619 – PAINTING BRIDGE STEEL

619.01 Description

This work shall consist of preparing surfaces and applying paint to steel bridges in accordance with ~~these specifications~~ 105.03 or as directed.

MATERIALS

619.02 Materials

Materials shall be in accordance with the following:

Epoxy Intermediate Paint.....	909.02(b)
Finish Coat for Weathering Steel.....	909.02(e)
<i>Multi-Component Inorganic Zinc Primer</i>	909.02(a)1
Organic Zinc Primer.....	909.02(a)2
Polyurethane Finish Coat.....	909.02(c)
Single Component Inorganic Zinc Primer	909.02(a)2
Structural Steel Coating Systems.....	909.03
Waterborne Finish Paint.....	909.02(d)

Material safety data sheets shall be provided in the QCP for all materials to be delivered to the project site.

CONSTRUCTION REQUIREMENTS

619.03 Quality Control and Quality Assurance

The Contractor shall be responsible for the quality of work on the contract and shall ensure that all work has been performed by accepted quality control methods. A QCP shall be prepared and submitted by the Contractor in accordance with ITM 803. ~~The QCP shall contain information specific to each bridge in the contract and shall be well organized in content. The QCP shall be submitted at least 15 work days prior to commencing this work.~~ No work may begin until written notice has been received that the QCP was accepted by the Engineer. The ~~QCP~~ QC manager shall furnish the current ~~SSPC Structural referenced Steel Painting Manual, Volumes 1 and 2, SSPC Standards~~ at the project site.

The ~~painting~~ Contractor shall be certified SSPC-QP 42 for cleaning and painting ~~existing bridge steel on steel bridges constructed before 1995, regardless of whether the existing coating is advertised as non-hazardous based or hazardous based. The Contractor shall be certified at a minimum of SSPC-QP 1 for cleaning and painting new bridge steel or for cleaning and painting existing bridge steel on steel bridges constructed after 1994, which does not have lead coatings and certified SSPC-QP 2 for cleaning and painting bridge steel which does have lead based coatings.~~ Evidence of the certifications shall be provided in the QCP. A QCP manager and QC technicians shall also be identified in the QCP.

The Department will accept work performed on the project through quality assurance inspections and testing. Acceptance testing will be performed and will be the basis for which acceptance will be made.

(a) Acceptance Testing Definitions

The following definitions of terms shall apply to acceptance testing of painting steel bridge work.

1. Lot

A lot shall be a series of tests performed on each phase for each 1076 sq ft (100 m²) or portions thereof.

2. Series

A series shall be 10 random tests performed by the Engineer on a lot.

3. Phase

A phase shall be painting operations consisting of either the cleaning of steel or the application of each coat of paint.

(b) Testing Procedure

During acceptance testing, the results of the random testing within a series will be compared to the specified requirements for that phase of work. A series of spot measurements spaced evenly over each lot will be made. The average of 10 spot measurements for each lot shall not be less than the specified thickness. A single spot measurement in any lot shall not be less than ~~80%~~ *80.0 percent* of the specified thickness. A reading below the minimum of the average of 10 spot measurements less than the specified thickness shall be considered a defect. If there is only one defect for the series of tests, the lot will be accepted provided there are no visual defects. If two defects are found in the first series of tests, then a second series of tests for each lot shall be measured. If three defects are found in the first series of tests, then the lot fails. If the first and second series of tests have four or less defects, both series pass. If there are more than four defects, then the lot fails.

If a lot fails, corrective action shall be taken to make the lot acceptable. Corrective action shall be submitted in writing and performed as approved. A failed lot shall not be covered until the whole lot has been accepted.

(c) Test Methods and Procedures

The current version of the following test methods and procedures shall be performed as a minimum for quality control by the Contractor. These and other tests may be performed for acceptance testing by the Engineer.

TEST/PROCEDURE	METHOD AND PROCEDURE
Surface Profile.....	ASTM D 4417
Clean Compressed Air	ASTM D 4285
Cleaning of Steel	SSPC Vis 1, Vis 3, and ISO 8501-1
<i>Cleanliness of Recycled Ferrous Metallic Abrasives</i>	SSPC AB 2
Dry Film Thickness.....	SSPC PA 2
State of Cure of Inorganic Zinc Primers	ASTM D 4752

619.04 Prosecution of Work

Prosecution of work shall be in accordance with the applicable requirements of 108.03. Once the ~~operations of~~ cleaning and painting *operations* have begun, it shall be performed on all work days without stoppage until all work has been completed. If the contract contains more than one bridge, a schedule shall be included in the QCP which provides the sequence of work on the bridges. ~~When~~ *Once* work has begun on a bridge, it shall be performed until complete, including all cleanup.

Permission shall be obtained in writing to start or continue work at the hold points as follows:

- (a) prior to the acceptance of the QCP and start of work;
- (b) immediately following ~~a~~ *each phase of* surface preparation ~~phase~~;
- (c) immediately before the application of the first coat;
- (d) prior to the application of each succeeding coat; and
- (e) after the final coat has cured.

A minimum of one day's notice shall be given in advance of each of the hold points.

619.05 Inspection Access to Bridges

Safe and reasonable access to all points of the bridge shall be provided for the Engineer's inspections immediately upon request. ~~The inspection access equipment shall be obtained, maintained, and kept in safe working order.~~

619.06 Maintaining Traffic

The traffic lanes may be restricted when surface preparation or painting phases are being performed on a portion of the bridge over the traveled roadway, or as directed, when the need exists. ~~A traffic maintenance plan shall be provided in the QCP and shall be in accordance with the plans.~~

Construction signs in accordance with 801.04 shall be furnished and placement at each project site shall be as shown in the QCP. However, a "Bridge Painting Ahead" sign may be used in place of the "Road Construction Ahead" sign.

The traffic maintenance plan shall include a type of barrier system which shall protect against blasting of vehicles or pedestrians, eliminate abrasive materials and debris from falling onto the traveled portion of the pavement, and prevent the spreading of abrasive materials and debris in the area which may create a traffic hazard. If the intended purpose of the protective devices has not been accomplished, work shall stop until adequate corrections have been made. All abrasive material or debris shall be removed by the end of each day's work in accordance with 619.07.

619.07 Environmental and Safety Requirements

Pollution control and waste disposal of existing paint *residue* and debris shall be in accordance with the following requirements.

~~The QCP shall contain a written description of the Contractor's hazardous waste training program in accordance with 40 CFR 265.16 and ITM 803. Likewise, the waste contingency plan shall be contained in the QCP and in accordance with ITM 803.~~

~~A health and safety plan shall be provided in the QCP and in accordance with ITM 803. Workers shall be protected in accordance with IOSHA requirements. All personnel on the project site shall wear personal protective equipment. The protective equipment shall be furnished by the Contractor, including to Department personnel. Training shall be given to all personnel provided with the protective equipment. Protective equipment shall include, but not be limited to, clean air supplied respirators, air purifying respirators, conventional hood as applicable, eye protection, and protective clothing. Two rooms for changing and washing shall be provided on lead-primed bridges containing hazardous-based coatings.~~

(a) Pollution Control

~~The containment procedure plan shall be provided in the QCP. The telephone numbers for the IDEM Emergency Response Branch, local health department, and all water intake users within 500 ft (150 m) shall be provided in the QCP.~~

Blasting materials, scrapings, wire brushings, and paint particles shall be contained in accordance with SSPC-Guide 6 (CON), Class 32A with method A, level 2 emissions, specifically for ~~zinc~~ non-hazardous primed bridges, and SSPC-Guide 6 (CON), Class 2A or better with method A, level 0 emissions, for ~~lead~~ hazardous primed bridges.

If a spill, as defined in IDEM Regulation 327 IAC 2-6.1 does occur, all work shall stop and immediate action shall be taken to clean up the site. Spills of materials, which enter or threaten to enter the water, shall be handled in accordance with IDEM Regulation 327 IAC 2-6.1. The IDEM Emergency Response Branch, the local health department, and all water intake users within 500 ft (150 m) of the bridge shall be immediately contacted and advised of the spill. Written documentation of all such contacts and actions shall be kept. All applicable Federal, State, and local rules and regulations described in 619.07(b)1 shall be observed.

On ~~existing~~ bridges with ~~lead paint~~, hazardous-based coatings, either steel grit blasting abrasives in accordance with SSPC AB 1 shall be used and recycled. ~~The or mineral/slag blasting abrasives in accordance with SSPC AB 3 shall be used and the waste residue generated shall be treated at a facility rendering it to a non-hazardous state and disposed of in accordance with all applicable Federal, State, and local regulations. If steel grit blasting abrasives are used, the recycling equipment shall be capable of separating the blasting abrasive from the paint debris.~~

Each bridge shall generate a separate waste stream and shall not be commingled with other materials. The first sample of waste residue from the bridge shall be sampled within after the first five-days day of removal and shipped to be tested within 24 hours in a manner agreed to by the Department and as described in the QCP. The Engineer will witness the extraction of each waste residue sample. The Department will maintain custody of each waste residue sample until it is shipped. A duplicate of each waste residue sample will be retained by the Department. Each waste residue sample shall be taken by random method as described in the QCP which reflects representation of the

entire bridge. Each waste residue sample shall represent approximately 25 percent of the cleaning area.. Residue shall be placed in an approved container. Such containers shall be properly labeled and maintained to comply with 40 CFR 264.

No waste shall remain on the booms or on ~~the~~ any water surface overnight. All blasting debris shall be cleaned up after each day's work. All waste material shall be properly stored at the project site to prevent loss or pollution.

If hazardous materials are found in the first or subsequent waste residue sample of an advertised, non-hazardous site, the Contractor shall immediately stop work on that bridge. The Contractor shall notify the Engineer that hazardous materials have been found and, if not addressed in the QCP, the Contractor shall submit revisions to the QCP that detail the necessary changes due to the presence of hazardous materials. The Contractor shall not return to work until the revised QCP is approved in writing. No additional time will be granted as a result of delays incurred while preparing and submitting a revised QCP.

(b) Waste Disposal

Disposal of existing paint *residue* and debris shall be in accordance with SSPC-Guide 7 ~~(DIS)~~ and the following requirements.

1. Laws to be Observed

Federal and State laws and regulations regulate the disposal of bridge painting debris. Bridge paint debris shall be manifested or certified and shall be disposed of at an appropriate disposal facility.

The Contractor shall have direct knowledge regarding compliance with laws pertaining to pollution control and waste management such as follows.

- a. subtitle C of the Resource Conservation and Recovery Act, 40 CFR 261, 262, 263, 265, and 268;
- b. the Solid Waste Rule, 329 IAC ~~2~~ 10;
- c. the Hazardous Waste Rule, 329 IAC 3.1;
- d. the Air Pollution Rule ~~326~~ 329 IAC 6-4;
- e. the Water Pollution Rule, 327 IAC 2-6.1;
- f. the United States Department of Transportation regulations 49 CFR 172.300; and
- g. OSHA worker safety regulations 29 CFR 1926.

2. Time Limitations

The maximum time limit from the date the generated waste is placed in a container and the date the material is transported to a permitted treatment, storage, and disposal facility shall be 90 calendar days.

3. Marking of Spent Material Containers

Spent material containers shall be marked with the date that waste *residue* is first placed in the container. Until laboratory results are received concerning the category of the waste *residue*, the containers shall be labeled "LEAD PAINT WASTE DEBRIS" or "ZINC PAINT WASTE DEBRIS", as appropriate. *The labeling shall include the contract number, bridge number, sample number, and sample date.* Labeling of containers as hazardous waste will not be required until the appropriate laboratory analysis determines the waste *residue* to be hazardous in accordance with the current RCRA hazardous waste definitions. Immediately upon notice that the waste *residue* is hazardous, the containers shall be marked in accordance with 49 CFR 172, Subpart D.

4. Instruction for Disposal of Paint Waste *Residue*

Sampling and analysis of the paint waste ~~debris~~ *residue* shall be performed to determine if the wastes are hazardous. If the waste *residue* is not found to be hazardous in accordance with current RCRA hazardous waste definitions, the waste *residue* material shall be disposed of at an appropriate disposal facility. If the waste *residue* is found to be hazardous, IDEM ~~shall~~ *will* be notified and an EPA identification number will be obtained ~~by the Department~~. This *number* will be provided to the Contractor within 30 days of the start of waste generation for bridges having hazardous waste paint debris. The waste *residue* from different bridges shall not be mixed. The Contractor shall have the *following responsibilities as follows:*

- a. determining the location for disposal, treatment, or recycling of the waste *residue*, obtaining the Engineer's approval of the site, and arranging with the approved site for acceptance of the materials;
- b. preparing a hazardous waste manifest, as required by Federal and State requirements, for signature;
- c. scheduling the shipment of waste *residue* to the permitted disposal site;
- d. ensuring that the hazardous waste manifest is carried in the transportation vehicle;
- e. ensuring that all required hazardous materials placards are properly displayed on the vehicle;
- f. ensuring prompt movement of the vehicle to the disposal site; and
- g. returning one copy of signed manifest documents to the Engineer. A copy of the chemical and physical analysis of the waste, all deposit receipts, manifests, and required paperwork for disposal shall be given to the Engineer and all waste *residues* disposed of before the contract will be accepted.

~~The waste disposal site shall be identified in the QCP.~~

5. Instructions for Disposal of Other Project Generated Waste

The other wastes that may be generated on the project include, but are not limited to, spent solvents from cleaning of equipment and empty or partially empty containers of paint, paint thinners, spent abrasives, and solvents. The Contractor shall recycle or dispose of all project-generated waste materials.

If the waste is defined as a hazardous waste in accordance with the current RCRA definitions, the waste shall be recycled or disposed of in accordance with 619.07(b)4. All project generated waste and the method of recycling or disposal shall be identified in the QCP.

619.08 Surface Preparation

Cleaning of steel surfaces shall be performed by ~~a~~ *an* SSPC certified contractor. This requirement will not apply to the following:

- (a) shop cleaning;
- (b) bearings at end bents;
- (c) small sections of beams at end bents or at piers with open joints; or
- (d) small sections of beams or other structural members where heat-straightening or similar repairs have taken place.

Surfaces to be painted shall be cleaned in accordance with *the* SSPC classification, unless otherwise specified. ~~The latest cleaning comparison chart available shall be provided in the QCP.~~ Compressed air shall pass through an oil and water extractor before entering another apparatus.

Field cleaned steel surfaces shall be primed the same day as cleaned. If rust forms after cleaning, the surface shall be cleaned again before painting. Work shall be stopped when there is disagreement about whether a surface has been adequately cleaned. Written notification shall be provided specifically identifying the problem.

Cleaning shall be scheduled so that dust or other contaminants do not fall on wet, newly painted surfaces.

A dust collector, that according to the manufacturer's recommendations, is suitable for the containment type and size shall be used during all blast cleaning operations in preparation for all structural steel paint systems and as directed for a partial paint system.

The surface profile of cleaned new steel surfaces shall not be less than 1 mil (25 μ m) and not greater than 2 mil (50 μ m). The surface profile of cleaned existing steel shall not be less than 1 mil (25 μ m) and not greater than 3 mil (75 μ m).

Pressure washing in accordance with 619.08(a) and solvent cleaning in accordance with 619.08(b) shall be performed *to remove all oils and soluble salts* before all other cleaning methods are started. *The Contractor may propose alternate cleaning methods in the QCP that will accomplish the removal of all oils and soluble salts.*

(a) Pressure Washing

All surfaces to be painted and the tops of pier and abutment caps shall be washed. The washing shall be accomplished by means of a low pressure power water washer with potable water. The pressure shall be between 800 and 1500 psi (5 and 10 MPa). If detergents or other additives are added to the water, the surface shall be rinsed with potable water before the detergents dries. All washed surfaces shall be completely free of all ~~foreign matter~~ *oils and soluble salts* and shall be approved prior to other surface preparation activities.

(b) Solvent Cleaning

After pressure washing has been approved, solvent cleaning shall be in accordance with SSPC-SP1.

(c) Near-White Blast Cleaning

Near-white blast cleaning shall be in accordance with SSPC-SP10/NACE No. 2.

(d) Commercial Blast Cleaning

Commercial blast cleaning shall be in accordance with SSPC-SP6/NACE No. 3.

(e) Hand Tool Cleaning

Hand tool cleaning shall be in accordance with SSPC-SP2.

(f) Brush-Off Blast Cleaning

Brush-off blast cleaning shall be in accordance with SSPC-SP7/NACE No. 4.

(g) Power Tool Cleaning

Power tool cleaning shall be in accordance with SSPC-SP3.

(h) Power Tool Cleaning to Bare Metal

Power tool cleaning to bare metal shall be in accordance with SSPC-SP11.

All mill scale shall be removed, except for that mill scale which remains in the lower portion of deep pits. The Engineer will determine the amount of mill scale that is to remain.

619.09 Paint Systems

Paint systems shall be applied in accordance with the manufacturer's recommendations. The dry film thickness of a paint coating will be measured with a calibrated film thickness gauge *in accordance with SSPC PA 2. All paint coatings shall have a dry film thickness not less than 80 percent of the required dry film thickness.*

(a) Structural Steel Paint System

The coating system shall consist of an inorganic zinc primer with a dry film thickness of 3 mil (75µm), an epoxy intermediate coat with a dry film thickness of 4 mil (100 µm), and a polyurethane finish coat with a dry film thickness of 3 mil (75 µm) for the painting of steel bridges and other structural steel.

(b) Partial Paint System

The coating system shall consist of organic zinc primer with a dry film thickness of 3 mil (75 µm) and a waterborne finish coat with a dry film thickness of 3 mil (75 µm) for partial painting of steel bridges and other structural steel.

619.10 Painting

Painting shall be performed by a SSPC certified contractor, except as noted in 619.08. ~~All technical data sheets containing the manufacturer's recommendations and instructions shall be provided in the QCP and in accordance with ITM 803.~~

Concrete at all junction points of concrete and steel shall be adequately shielded or otherwise protected so the application of paint on steel is full and complete, and that spraying onto the concrete is minimized.

If a blasted or painted surface is unsatisfactory, removal of the paint, thorough cleaning of the surface, and repainting or other correction will be required as directed. Where defects or damages occur in a film of any coating, all defective areas shall be removed to soundly bonded paint or bare steel and painted to the specified thickness.

No lettering shall be painted on bare or painted steel surfaces, except marks required for erection and project information stenciled in accordance with 619.10(g).

All joints of lapping members shall be caulked after either the application of the epoxy intermediate coat of the Structural Steel Paint System or the application of the organic zinc primer of the Partial Paint System. This coat shall be cured to the manufacturer's recommended coating cure time prior to caulking. The caulk used shall be compatible with either the Structural Steel Paint System or the Partial Paint System, and in accordance with the paint manufacturer's recommendations as described in the QCP. All vertical and diagonal lapping members shall be caulked at the top and sides. The bottom shall remain open for drainage. All horizontal members shall be caulked on the leading edge, in relation to traffic flow of the primary roadway, and sides. The trailing edge shall remain open for drainage. Where the primary road is a bridge deck, the underside of the bridge deck shall be caulked in relation to the traffic flow of the secondary road.

(a) Weather Limitations

Field painting will not be permitted between November 15 and the following April 1 *unless requested in the QCP and approved in writing*. Painting shall begin only when the 24 h ambient temperature is to remain above 50°F (10°C) after paint application, and the steel surface temperature is between 50 and 100°F (10 and 40°C). Coating and curing shall be done only when the relative humidity is to remain between 30 and 80% *percent*. ~~All variations of these weather limitations to allow the use of any coating below the minimum or above the maximum temperature or humidity as may be recommended by the manufacturer shall be provided in the QCP.~~ The pot life and induction time shall be in accordance with the manufacturer's recommendations for the existing temperature and humidity.

Paint shall not be applied when the air is misty, or when conditions are otherwise unsuitable. The surface temperature of the steel to be painted shall not be within 5°F (3°C) of the dew point. When painting in a protected area to eliminate the above conditions, the steel shall remain under cover until the paint is dry. All wet paint which

has been exposed to excessive humidity, rain, snow, or condensation shall be permitted to dry. Damaged paint shall then be removed. The surface shall be re-cleaned and repainted as directed. The Engineer will be the sole authority to decide when work may begin or shall stop due to weather conditions.

(b) Storage

Paint shall be stored in accordance with the manufacturer's recommendations. If paint is permitted to remain in storage, the containers shall be turned end for end at least once per week. The paint shall be used within the manufacturer's recommended shelf life.

(c) Mixing

Paint shall be thoroughly mixed so that the pigment is completely in suspension and the consistency is uniform. Mechanical mixers shall be used in accordance with the manufacturer's instructions. The paint shall remain in this condition during application to the steel surface. After initial mixing and before application, zinc primer shall be strained through a metal screen not coarser than the No. 30 (600 µm) sieve.

Partially empty containers of paint shall not be used. Partial mixing of containers will not be permitted. All paint containers shall remain closed until needed for mixing.

(d) Thinning

When required for proper application, the thinning of field paint will be permitted. Only thinners recommended by the manufacturer and as approved shall be used. Thinners shall be added to paint in accordance with the manufacturer's recommendations. The maximum quantity added shall not exceed the manufacturer's recommendations. The thinned paint shall not exceed IDEM regulations for volatile organic compounds.

The Contractor shall contact IDEM and the local air pollution control board for information about any volatile organic compound regulations or restrictions. ~~Proof of contact to these agencies shall be provided in the QCP.~~

(e) Application of Paint

All paint coatings shall be of colors to produce a distinct contrast with adjacent coatings, including the color of a clean steel surface.

Paint shall be applied by either an airless or conventional spray method which has been recommended by the paint manufacturer. The compressed air used for painting shall pass through an oil and water extractor before entering the paint pot. However, areas to be painted which are inaccessible to spray application or areas requiring touchup may be painted with brush or daubers. Epoxy intermediate and polyurethane finish paints may be applied by brushes or rollers provided the coating cures to a smooth and uniform finish.

Spray shall be adjusted to produce a uniform coating. ~~All If using the structural steel paint system in accordance with 619.09(a), all 90 degree edges shall be striped on the second and third coats, and then repainted with the remaining steel surfaces. Painting techniques shall minimize dry overspray. Dry overspray shall be removed prior to application of other coatings and after application of the finish coat. If specified, the stripe coat shall be allowed to dry to recoat dry time prior to painting the second and third coats on the remaining steel surfaces.~~

~~All paint coatings shall have a dry film thickness not less than 80% of the required dry film thickness.~~

If using the partial paint system in accordance with 619.09(b), all 90 degree edges shall be striped on each of the coats, and then repainted with the remaining steel surfaces. If specified, the stripe coat shall be allowed to dry to recoat dry time prior to painting the remaining steel surfaces. Painting techniques shall minimize dry overspray. Dry overspray shall be removed prior to application of other coatings and after application of the finish coat.

(f) Curing Time

The minimum curing time between coatings shall be 24 h for inorganic zinc primers and 8 h for the epoxy intermediate coat. The curing time will vary depending on the temperature and humidity. The inorganic zinc primer shall be cured to a minimum solvent resistance rating of 4 in accordance with ASTM D 4752 prior to the application of the epoxy intermediate coat. It shall be demonstrated that the inorganic zinc primer is in accordance with this requirement. The epoxy intermediate coat shall be cured in accordance with the manufacturer's recommendations prior to the application of the polyurethane finish coat. The polyurethane finish coat shall be applied within 12 calendar days of application of the epoxy intermediate coat.

The curing time of all other paint systems or coatings shall be in accordance with the manufacturer's recommendations.

(g) Stencil Identification

After the finish coat has been approved, project identification information shall be painted with a stencil in 2 in. (50 mm) black capital letters onto the outside of both fascia beams, at the right end of the beam and near the end bent, which reads as follows:

bridge number

contract number

PAINTED _____

date

619.11 Shop Painting

All structural steel shall be cleaned in accordance with 619.08(c). ~~All technical data sheets containing manufacturer's recommendations and instructions shall be provided in the QCP and in accordance with ITM 803.~~

All structural steel, except for ASTM A 709, grade 50W (ASTM A 709M, grade 345W) steel, shall receive an inorganic zinc primer, including faying surfaces of high strength bolted connections and areas in contact with concrete. When shear connectors have been specified, the top of the *top* flange shall not be painted.

Surfaces, other than the contact surfaces described above, which are inaccessible after erection shall be painted in the shop with the full paint system required on the completed bridge.

Machine finished surfaces for sliding contact shall be coated with heavy grease as soon as practicable after being accepted, but before removal from the shop.

Erection marks may be painted on zinc painted surfaces. Shop painted beams shall not be loaded for shipment until the paint ~~is dry~~ *has been allowed to dry to the manufacturer's recommended dry to handle time.*

ASTM A 709, grade 50W (ASTM A 709, grade 345W) steel shall be left unpainted, except as shown on the plans. Surfaces, when specified, shall be painted in accordance with 619.09(a), except the finish coat shall be in accordance with 909.02(e).

619.12 Field Painting New Steel Bridge

All structural steel which has been painted with inorganic zinc primer in the shop, except for steel contact surfaces and surfaces to be in contact with concrete, shall be painted with the other coatings specified for structural steel paint system in accordance with 619.09(a). All steel surfaces which become inaccessible to field painting after final erection shall be painted with all coats of structural steel paint system before structural steel ~~is~~ erected.

If application of the inorganic zinc primer on a steel surface is not permitted in the shop before erection of the bridge, the surfaces which are exposed shall be cleaned in accordance with 619.08(a), 619.08(b), and 619.08(c). These surfaces shall then be painted with the structural steel paint system after erection.

Surface areas where the inorganic zinc primer was damaged during shipping, handling, and erection shall be cleaned in accordance with 619.08(a), 619.08(b), and either 619.08(d) or 619.08(h). Likewise, all bolt and field connections shall be cleaned in the same manner. All the damaged areas, and bolt and field connections shall then be painted with the inorganic zinc primer applied in the shop. This requirement will not apply to temporary steel bridges.

Where steel surfaces have been painted with the full paint system and the paint coatings have been damaged, the affected steel surface areas shall be cleaned in accordance with 619.08(h). Structural steel paint system shall then be re-applied.

619.13 Painting Existing Steel Bridges

The surfaces to be cleaned and painted shall include the surfaces of all steel members of the superstructure, substructure, floor beams, stringers, plates, castings, bearing assemblies, ornamental handrails, lattice work, and other steel appurtenances.

If the contract specifies clean steel bridge, the bridge steel shall be cleaned in accordance with 619.08(a), 619.08(b), and either 619.08(d) or 619.08(h). The structural steel paint system in accordance with 619.09(a) shall be used for painting.

If the contract specifies clean steel bridge, partial, the bridge steel shall be cleaned in accordance with 619.08(a), 619.08(b), and either 619.08(d), or 619.08(g), or 619.08(h). The partial paint system in accordance with 619.09(b) shall be then be used for painting.

619.14 Drain Castings Treatment

Drain castings shall be satisfactorily cleaned. The castings shall not be shot-blasted. If castings are sandblasted, a brush blast technique shall be used in accordance with 619.08(f).

The drain castings shall be painted with a black finish coat in accordance with 909.02(c).

619.15 Claims

No claim shall be made for damage, including but not limited to, damage for delay, increased expense, maintenance, start up costs, additional costs due to passage of time arising out of a dispute, or work stoppage relating to whether a surface was adequately cleaned or painted.

No claim shall be made due to a greater amount of paint used in excess of the minimums required by the contract or for the stoppage of work. ~~Each bridge shall be inspected before bidding for the exact type of primer that exists on each bridge.~~

619.16 Responsibility for Damage

Unless otherwise permitted by the Engineer in writing, the Contractor or subcontractor shall provide full containment when performing the surface preparation operation and when applying all coats of paint (except primer coats) with spray equipment. All persons and property shall be protected from damage or injury from the surface preparation operations, paint, and painting operations by providing containment as described in the QCP. Persons and property shall include, but not be limited to, pedestrians, vehicles, and other traffic upon or underneath a bridge, all portions of the bridge superstructure and substructure, and all adjacent property. The Contractor shall be responsible for damages in accordance with 107.17.

619.16.1 Location of Steel to be Painted

The location of the steel to be painted on a bridge has been categorized into the following three types. There may be more than one type indicated per bridge.

- (a) Type 1 – The steel to be painted at this location is entirely beneath the bridge deck. A beam or girder bridge is a representative bridge.*
- (b) Type 2 – The majority of the steel to be painted at this location is beneath the bridge deck. However some steel extends above, but not over, the bridge deck. A pony truss bridge is a representative bridge.*
- (c) Type 3 – The majority of steel to be painted at this location is above and over the bridge deck. There is some steel to be painted beneath the bridge deck. A through truss is a representative bridge.*

619.17 Method of Measurement

Cleaning, painting, and environmental control will be measured by the square foot (square meter) of surface area for each bridge deck of each type as specified.

~~Cleaning~~—*Cleaning drain castings and caulking joints of lapping members and painting will not be measured for payment.*

If a bridge is advertised as having existing hazardous materials, no measurement will be made of the area covered by mill scale. For bridges advertised as having existing non-hazardous materials, the area of structural steel covered by mill scale will be measured for payment after a proper cleaning of the entire containment area or an agreed large portion thereof and removing all other existing materials, including all paint and rust. The percentage of the area of structural steel covered by existing mill scale will be representative of this entire area. The Pre-established Remedies for this Changed Condition apply in accordance with 104.02(d) and 619.18.

Floor drain extensions will be measured per each drain extended.

The estimated weight (mass), length, and number of steel spans and type of primer shown on the plans or in the Proposal book is incidental information. Such information is approximate only. The Department will not guarantee its accuracy.

619.18 Basis of Payment

Removal of paint ~~of~~ from an existing bridge will be paid for at the contract ~~lump sum~~ unit price per square foot (square meter) of the surface area of the bridge deck for clean steel bridge or clean steel bridge, partial, at the bridge number specified. The accepted quantities of existing steel bridges to be painted, or partial painted, whichever is specified, will be paid for at the contract ~~lump-sum~~ unit price per square foot (square meter) of the surface area of the bridge deck for paint steel bridge or paint steel bridge, partial, at the bridge number specified.

(a) Prices used in Pre-Established Remedies to Changed Conditions

The following prices will be computed and used as the price for the pay item identified below in all Pre-Established Remedies to Changed Conditions referenced in this section.

- 1. The price for the clean steel bridge item, per bridge, used in all Pre-Established Remedies to Changed Conditions referenced in this section will be limited to the lesser of the following:*
 - a. 70.0 percent of the sum of: the clean steel bridge item, paint steel bridge item, and environmental control item for that bridge; or*
 - b. the actual amount for the clean steel bridge item for that bridge shown in the Schedule of Pay Items.*
- 2. The price for the environmental control item, per bridge, used in all Pre-Established Remedies to Changed Conditions referenced in this section will be limited to the lesser of the following:*

- a. 8.0 percent of the sum of: the clean steel bridge item, paint steel bridge item, and environmental control item for that bridge; or
- b. the actual amount for the environmental control item for that bridge shown in the Schedule of Pay Items.

(b) Pre-Established Remedies for Changed Conditions

1. Discovery of Hazardous Materials but No Mill Scale on a Site Advertised as Non-Hazardous

The payment will be an additional 25.0 percent of the environmental control item as computed in 619.18(a)2 and clean steel bridge item as computed in 619.18(a)1, all in accordance with 109.05 as payment for all additional costs incurred.

2. Discovery of Mill Scale but No Hazardous Materials on a Site Advertised as Non-Hazardous

If, on a bridge advertised as having existing non-hazardous materials and the presence of hazardous materials has not been confirmed by laboratory analysis, the area of structural steel covered by mill scale comprises greater than 15.0 percent of the area of structural steel in accordance with 619.17, additional compensation for the removal of the mill scale will be made as an adjustment to the clean steel bridge item in accordance with the following:

- a. For areas of structural steel greater than 15.0 percent and up to and including 25.0 percent of the area covered by mill scale, an additional payment of 15.0 percent of the clean steel bridge item as computed in accordance with 619.18(a)1 will be made.
- b. For areas of structural steel greater than 25.0 percent and up to and including 50.0 percent of the area covered by mill scale, an additional payment of 30.0 percent of the clean steel bridge item as computed in accordance with 619.18(a)1 will be made.
- c. For areas of structural steel greater than 50.0 percent and up to and including 75.0 percent of the area covered by mill scale, an additional payment of 45.0 percent of the clean steel bridge item as computed in accordance with 619.18(a)1 will be made.
- d. For areas of structural steel greater than 75.0 percent of the area covered by mill scale, an additional payment of 60.0 percent of the clean steel bridge item as computed in accordance with 619.18(a)1 will be made.

3. Discovery of Hazardous Materials and Mill Scale on a Site Advertised as Non-Hazardous

If the laboratory analysis of a waste residue sample on a bridge advertised as having non-hazardous materials yields results indicating the presence of hazardous materials, the entire bridge shall be considered as having mill scale and the following Pre-Established Remedy for this Changed Condition in accordance with 104.02(d) shall apply. If agreed to in writing between the Contractor and the Department, the work shall

proceed with the Contractor assuming all risks for removal of mill scale. An additional 55.0 percent of the environmental control item as computed in 619.18(a)2 and clean steel bridge item as computed in 619.18(a)1, all in accordance with 109.05 will be paid as additional compensation for the removal and disposal of the hazardous materials, the removal of the mill scale, the additional containment required, and all other incidental items associated with the removal of the hazardous materials and mill scale.

Drain extensions will be paid for at the contract unit price per each.

~~If the contract includes a pay item for maintaining traffic, such work will be paid for at the contract lump sum price for maintaining traffic, at the bridge number specified.~~

Environmental control devices required when cleaning and painting existing steel bridges will be paid for at the contract ~~lump sum~~ unit price *per square foot (square meter) of surface area of the bridge deck* for environmental control at the bridge number specified.

Payment will be made under:

Pay Item	Pay Unit Symbol
Clean Steel Bridge, Type ____, QP- ____, Br. No. _____	LS SFT (m2)
Clean Steel Bridge, Partial, Type ____, QP- ____, Br. No. _____	LS SFT (m2)
Drain Extension.....	EACH
Environmental Control, Type ____, Br. No. _____	LS SFT (m2)
Maintaining Traffic, Br. No. _____	LS
Paint Steel Bridge, Type ____, Br. No. _____	LS SFT (m2)
Paint Steel Bridge, Type ____, Br. No. _____	LS SFT (m2)

The cost to prepare a QCP shall be included in the cost of ~~other~~ *the* pay items of *this section*. The cost of providing the Department with access to the bridge, the use of special cleaning methods, handling debris containers, and seasonal or weather limitations, ~~and shall be included in the cost of the pay items of this section.~~ *The cost of all labor, materials, and equipment required for maintaining traffic shall be included in the maintaining traffic item in accordance with 801. If no maintaining traffic item is included in the contract, the cost of other all labor, materials, and equipment required for maintaining traffic shall be included in the cost of the pay items of this section.*

If a bridge is advertised as having existing hazardous materials, no additional payment will be made for the removal of mill scale. The cost of the removal of mill scale shall be included in the cost of clean steel bridge or clean steel bridge, partial.

If a bridge is advertised as having existing non-hazardous materials and the percentage of the area covered by mill scale is less than or equal to 15.0 percent of the total structural steel surface area of a bridge measured in accordance with 619.17 no additional payment will be made for the removal of mill scale. The cost of the removal of mill scale shall be included in the cost of clean steel bridge or clean steel bridge, partial.

The cost of furnishing all materials, equipment, and labor required for washing, solvent cleaning, scraping, steel brushing, or other acceptable methods for removing paint in the locations directed shall be included in the cost of clean steel bridge or clean steel bridge, partial. *The cost of cleaning drain castings shall be included in the cost of clean steel bridge or clean steel bridge, partial.*

The cost of providing containment in accordance with 619.16 shall be included in the cost of the pay items of this section.

The cost of furnishing all materials *including caulk*, equipment, and labor to perform *caulking and* painting with structural steel paint system shall be included in the cost of paint steel bridge and to perform painting with partial paint system shall be included in the cost of paint steel bridge, partial. ~~Painting will not be paid for separately, unless so specified. The cost thereof shall be included in the cost of other pay items.~~ *The cost of furnishing all materials, equipment, and labor to perform painting of the drain castings shall be included in the cost of paint steel bridge or paint steel bridge, partial.*

The cost of all equipment, material, labor, testing, *shipping of waste residue samples*, and disposal of spent materials, *waste residues*, and debris shall be included in the cost of environmental control. No additional payment will be made for delays from all operations undertaken for this work. The absence of an environmental control pay item shall not negate the Contractor's responsibility for complying with the environmental control requirements in all phases of this work. *If a pay item for environmental control is not included in the contract, the cost of all aspects of environmental control shall be included in the cost of the pay items of this section.*

REVISION TO 2008 STANDARD SPECIFICATIONS

SECTION 619, CONTINUED.

Other sections containing
specific cross references:

619.07
619.06 Pg 392

619.08
619.10 Pg 398

619.07(b)1
619.07(a) Pg 393

619.08(h)
619.12 Pg 401

619.07(b)4
619.07(b)5 Pg 396

Recurring Special Provisions
potentially affected:

709-M-019

Motion: M
Second: M
Ayes:
Nays:

General Instructions to Field Employees

Update Required? Y___ N___

By - Addition or Revision

Frequency Manual

Update Required? Y___ N___

By - Addition or Revision

Standard Sheets potentially affected:

704-BDCG-05

Action: Passed as submitted; revised

___ RSP Effective: _____ Letting

___ RSP Sunset Date: _____

___ RPD Effective: _____ Letting

___ 20__ Standard Specifications Book

___ 20__ Standards Edition

___ 20__ Design Manual

___ Technical Advisory

Withdrawn _____

Received FHWA Approval? _____



INDIANA DEPARTMENT OF TRANSPORTATION

DRIVING INDIANA'S ECONOMIC GROWTH

Design Memorandum No. 08-____ **Technical Advisory**

February 5, 2008 DRAFT

TO: All Design, Operations, and District Personnel, and Consultants

FROM: _____
Anthony L. Uremovich
Design Resources Engineer
Production Management Division

SUBJECT: Painting Structural Steel; Bridge-Deck Drains

ADDS: *Indiana Design Manual Section 17-4.11*

REVISES: *Indiana Design Manual Section 33-2.04*

EFFECTIVE: _____, 2008, Letting

PAINTING STRUCTURAL STEEL

If all of the structural steel on a bridge is to be painted, the applicable pay items are as follows:

619-xxxxx Environmental Control, Type ____
619-xxxxx Clean Steel Bridge, Type ____, QP-____
619-xxxxx Paint Steel Bridge, Type ____

If only a portion of the structural steel on a bridge is to be painted, the applicable pay items are as follows:

619-xxxxx Environmental Control, Type ____
619-xxxxx Clean Steel Bridge, Partial, Type ____, QP-____
619-xxxxx Paint Steel Bridge, Partial, Type ____

The pay unit for all of the pay items listed above is square foot (square meter) and is computed as the surface area of the bridge deck (out-to-out coping X out-to-out bridge floor) for each type listed below.

The “Type ____” designation refers to the location of the steel to be painted. The following types are available:

Type 1 – the steel to be painted at this location is entirely beneath the bridge deck. A beam or girder bridge is a representative bridge. Type 1 is the most common.

Type 2 – the majority of the steel to be painted at this location is beneath the bridge deck. However some steel extends above, but not over the bridge deck. A pony truss bridge is a representative bridge.

Type 3 – the majority of the steel to be painted at this location is above and over the bridge deck. There is also some steel to be painted beneath the bridge deck. A through truss is a representative bridge.

A bridge may have more than one “Type” designation. For example a through truss with beam approach spans would have both a Type 1 and Type 3 designation and would have two pay items for Environmental Control, Clean Steel Bridge, and Paint Steel Bridge for that particular bridge.

The “QP-____” designation in the cleaning items refers to the certification level of the contractor. If any portion of the bridge being cleaned was constructed before 1995, the QP-2 designation should be used. If the entire bridge consists of new steel or was constructed after 1994, the QP-1 designation should be used.

If more than one bridge is to be painted on a contract, a supplemental description of *Br. No. ____* should be added to each of the above pay items, to correspond to the bridge file numbers and bridge numbers used in the list of pay items identified in Recurring Special Provision 101-B-042.

A pay item for maintaining traffic, code number 801-06775, pay unit lump sum, should be used. A supplemental description, *Br. No. ____*, should be included if more than one bridge is to be painted on a contract.

If only the bearings, end diaphragms, beam ends, etc., are to be treated, the pay items listed above for painting a portion of the structural steel should be used. Additional clarification should be provided via a unique special provision, or details should be shown on the plans.

The number of bridges in one contract should be limited to not more than three sites. This will result in more contracts, but it should result in more competitive bidding. It will also provide a better opportunity of completing the contract within the temperature and humidity restrictions and within the construction season. The total weight of steel per bridge and surface area that is to be painted, listed per bridge should also continue to be included in the contract.

jr:alu

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FINAL

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED:

Current field office specification is in several locations including the 2008 SS and 5 Recurring Special Provisions. Additionally, industry has requested we streamline the spec and make it clearer what is being bid.

PROPOSED SOLUTION:

Create a new RSP that will encompass all current specs for field office, laboratory, computers, etc. The RSP will delete current sections 105.17 and 106.04 and place the new spec in the 600 section. This is typically where other states have placed this work.

It is recommended that the new RSP be made effective with July 2008 lettings and that it be incorporated into the 2010 SS.

APPLICABLE STANDARD SPECIFICATIONS: Current 105.17 & 106.04

APPLICABLE STANDARD DRAWINGS: None

APPLICABLE DESIGN MANUAL SECTION: None

APPLICABLE SECTION OF GIFE: Section 2.13

APPLICABLE RECURRING SPECIAL PROVISIONS: 105-C-071b, 105-C-207, 105-C-208, 105-C-216, 105-C-217

Submitted By: Ron Heustis

Title: Manager

Organization: INDOT, Construction Management

Phone Number: 317-234-2777

Date: March 17, 2008

APPLICABLE SUB-COMMITTEE ENDORSEMENT?

This proposal is the result of an ad hoc committee consisting of Bill Bonning, Mike Jenkins, Mick Sandefer, Sheri Meyerhoff, Don Thornton, Roland Fegan and Ron Heustis. It has been reviewed by Industry thru ICA.

PROPOSED NEW RECURRING SPECIAL PROVISION

628-R-XXX FIELD OFFICE, FIELD LABORATORY, COMPUTER SYSTEMS AND OFFICE
MACHINES

(Adopted XX-XX-XX)

The Standard Specifications are revised as follows:

SECTION 105, LINE 593, DELETE AND INSERT AS FOLLOWS:

105.17 ~~Field Office~~ Blank

SECTION 105, DELETE LINES 594 THRU 954.

SECTION 106, LINE 168, DELETE AND INSERT AS FOLLOWS:

106.04 ~~Field Laboratory~~ Blank

SECTION 106, DELETE LINES 169 THRU 173.

SECTION 628, BEGIN LINE 1, INSERT AS FOLLOWS:

**SECTION 628 – FIELD OFFICE, FIELD LABORATORY, COMPUTER SYSTEMS
AND OFFICE MACHINES**

628.01 Description

This work shall consist of providing the specified facilities, equipment, supplies and services in accordance with 105.03.

628.02 Field Office and Laboratory Requirements

10 *When specified, the Contractor shall provide a field office, computer systems, office machines, field laboratory, services, equipment and supplies for the Department's exclusive use in accordance with the minimum requirements listed below.*

(a) Field Office

20 *The field office shall be located as mutually agreed by the Engineer and the Contractor. If a building exists within the limits of the right-of-way that is acceptable as a field office and the building is scheduled to be removed under the terms of the contract, the building may be equipped and furnished as the field office. A building within the right-of-way that is furnished under this specification shall be removed prior to the date of the last work and other acceptable facilities for the field office shall then be provided.*

The field office may be a permanent building or a trailer and shall be of the type shown on the Schedule of Pay Items. The building or trailer furnished for the field office shall be in accordance with all applicable state and local codes and applicable IOSHA/OSHA requirements.

30 *The field office shall be complete and ready for use by the Department, including all utility connections and specified computer systems, office machines, internet service, equipment and supplies, prior to the start of work. If the Contractor is unable to provide the permanent field office prior to the start of the work, the Engineer shall be notified in writing and the Contractor and the Engineer will agree on temporary field office arrangements prior to the start of work. A temporary field office will not be accepted by*

the Department for more than two months, at which time a permanent field office shall be ready for the Department's use.

The field office shall at a minimum be the size listed below for the type field office specified.

1. *Type A – 400 sft (37 m²)*
2. *Type B – 550 sft (51 m²)*
3. *Type C – 650 sft (60 m²)*

Minimum dimensions shall be 8 ft (2.4 m) wide and 7 ft (2.1 m) in height, from floor to ceiling. For a trailer, the calculation of minimum area will be based on the exterior box dimensions.

The office shall have a solid and level floor with no holes, a weatherproof roof and shall be dust-proof, and wind-tight. The field office shall have at least 2 doors for ingress and egress and shall have a minimum of 6 windows for a type A or B field office and 8 windows for a type C field office, not including any windows in the doors.

Each door shall have a satisfactory lock. At least one door must always be able to be unlocked and opened from inside the field office. If a padlock is used to secure a door, it shall be a high security type which is invulnerable to bolt cutters, hacksaws, hammers, or prybars. The padlock shall be mounted in such a manner that locking and unlocking the door is satisfactorily convenient. Installation of additional hardware to protect the lock or use of multiple padlocks on a door will not be permitted. However, additional hardware to receive the padlock will be acceptable. The Contractor shall furnish the number of keys to the office as directed by the Engineer. The Department will maintain a list of all Department personnel who are given keys.

Windows shall be hinged or sliding and have a minimum area of 5 sft (0.45 m²) each. Windows shall be provided with satisfactory locks and screens. Windows, including windows in the doors, shall be provided with shades, blinds, or other approved coverings.

The field office shall have heating and air-conditioning equipment capable of maintaining a uniform temperature between 68°F and 80°F (20°C and 26°C).

The field office shall have a minimum 100 amp, 120/240 volt electrical service, shall have sufficient receptacles to satisfactorily accommodate all required electrical equipment without the use of extension chords or splitters and shall be provided with satisfactory office type lighting.

The field office shall include a minimum of one separately lockable storage area suitable to store a nuclear density/moisture gauge. The storage area shall have a minimum storage volume of 63 cu ft (1.3 m³) with a minimum floor area of 9 sft (1 m²).

If the field office is a trailer, the trailer shall be securely supported by adequate blocking. The blocking shall provide a foundation to prevent settlement. The trailer shall be secured to the ground with a trailer tie down system that is in accordance with all

state and local requirements. Each trailer shall be furnished with steps meeting IOSHA/OSHA requirements at each doorway.

The field office location shall be selected in order to provide satisfactory parking and trash disposal facilities for Department use. Parking spaces shall be either paved or surfaced with compacted aggregate, size No. 53, or other acceptable materials suitable for all-weather usage.

(b) Field Office Equipment and Supplies

90 The following minimum equipment and supplies shall be furnished for each field office of the type specified.

	Office Type	A	B	C
	Pencil Sharpener	1	1	1
	Broom and Dust Pan	1	1	1
	Six-hook Coat Rack	1	1	1
	Toilet Facilities	Yes	Yes	Yes
	Drinking Water	Yes	Yes	Yes
	Fire Extinguishers	1	2	2
100	First-Aid Kit	1	1	1
	Bloodborne Pathogen Kit	1	1	1
	Smoke Detector	1	1	2
	Carbon monoxide Detector	1	1	1
	Doors	2	2	2
	Windows	6	8	8
	Shelving	16 lft (4.9 m)	20 lft (6.1 m)	24 lft (7.3 m)
	Telephones	2	2	3
	Voice Mail	1	1	1
	Telephones Lines	2	2	3
110	File Cabinet Drawers	4	8	12
	Office Desks & Office Chairs	2	4	4
	Folding Office Tables	1	2	2
	Chairs	4	8	12
	Drafting Tables	1	1	1
	Drafting Stools	1	1	1
	Waste Paper Baskets	2	4	4
	Cleaning Supplies	Yes	Yes	Yes
	Calculators	1	2	2
	Paper Shredder	1	1	1
120	Microwave Oven	1	1	1
	Refrigerator/Freezer	1	1	1

The office and the equipment shall be furnished in a condition satisfactory to the Department.

Adequate quantities of basic hygiene and office cleaning supplies shall be provided. These supplies shall include, but are not limited to, hand soap, hand sanitizer, paper towels, toilet paper, window cleaner, all-surface cleaner, toilet disinfectant, toilet brush and a toilet plunger.

130

Potable drinking water with both hot and cold water capabilities shall be furnished. Drinking cups and paper towels shall be provided.

Fire extinguishers shall be five-pound, Class ABC or higher rated and shall be maintained in a fully charged and operable condition and shall meet all IOSHA/OSHA requirements.

First-aid kits shall meet the requirements of ANSI Z308.1 current at the time of letting.

140

Shelving shall have a minimum width of 10 in. (250 mm).

At least one telephone shall be a cordless phone having a frequency of at least 900 MHz.

The telephone voice mail system shall be capable of providing both a minimum one minute outgoing message and 30 minute total recording time for incoming messages. It shall have a remote operation feature, which may be used from to retrieve, replay, erase, and save messages. An answering machine meeting these requirements may be substituted for the voice mail system.

150

Filing cabinets shall at a minimum be fire resistant steel filing cabinets with a class D or higher classification established by UL or Safe Manufacturers National Association. Cabinet drawers shall have a filing depth of 25 in. (635 mm). All cabinets shall have a lock and at least four drawers shall be fire proof.

Office desktops shall be at least 48 in. (1220 mm) wide and 25 in. (635 mm) deep. All desks shall contain at least two drawers, one of which shall be provided with a lock.

160

Folding office tables shall be a minimum size of 30 in. x 60 in. (760 mm x 1520 mm).

Office desk chairs shall be height adjustable and equipped with castors. The remaining chairs may be stackable or folding chairs.

Drafting tables shall contain a tilt top work table for drafting purposes. Dimensions shall be at least 30 in. x 60 in. (760 mm x 1520 mm). The drafting stool shall be proportional to each drafting table.

170

Supplies to be furnished shall include all items required for proper operation of the required equipment. This includes, but is not limited to, operating manuals and paper supplies.

Calculators shall be electric powered, have a printer and a minimum 12-digit capacity.

The shredder shall have a minimum capacity of 12 sheets (20 lb. paper), shall be capable of shredding paper clips and staples and shall include a 5 gallon capacity waste basket.

180 *The microwave oven shall have a minimum 1.0 cu ft capacity with a minimum 1100 watts and shall have digital controls.*

The refrigerator/freezer shall have a minimum combined capacity of 12 cu ft.

The field office and all equipment and supplies shall be maintained and replenished in a satisfactory manner during the term of the contract or until released by the Engineer. If the field office or required equipment and supplies are not maintained by the Contractor, the Engineer may withhold partial payments until the field office is operational to the Department's satisfaction.

190 **(c) Field Office Computer System**

The Contractor shall provide for the Department's exclusive use either one desktop or one laptop computer system for each field office specified in accordance with the minimum requirements listed below.

1. Field Office Desktop Computer System

- a. *Processor – Intel or AMD compatible, 2.0 GHz*
- b. *Memory – 1.0 GB, DDR2 – 533 MHz SDRAM*
- c. *Hard Drive – 60 GB, 5400 rpm*
- d. *Optical Drive – 8x DVD+/-RW drive*
- e. *Media Drive – 3.5 in. floppy disk drive, internal or external*
- f. *Ports – Two USB 2.0 compliant ports*
- g. *Network/Wireless – Ethernet or wireless card to be compatible with the selected internet and office network connections*
- h. *Graphics – Integrated graphics card*
- i. *Monitor – 22 in. widescreen digital flat panel*
- j. *Keyboard –USB enhanced multimedia keyboard*
- k. *Mouse – USB 2-button scroll mouse*

2. Field Office Laptop Computer System

- a. *Processor – Intel or AMD compatible, 2.0 GHz*
- b. *Memory – 1.0 GB, DDR2 – 533 MHz SDRAM*
- c. *Hard Drive – 60GB, 5400 rpm*
- d. *Module Bay Device – 8x DVD+/-RW drive*
- e. *Media Drive – 3.5 in. floppy disk drive, internal or external*
- f. *Ports – Two USB 2.0 compliant ports*
- g. *Network/Wireless – Ethernet or wireless card to be compatible with the selected internet and office network connections*
- h. *Graphics – Integrated graphics card*
- i. *Display – 15" XWGA LCD panel*
- j. *Battery – 9 cell lithium ion*
- k. *External Monitor – 22 in. widescreen digital flat panel*
- l. *External Keyboard – USB enhanced multimedia keyboard*
- m. *External Mouse – USB 2-button scroll mouse*
- n. *Miscellaneous – One compatible port replicator with AC adapter, one additional AC adapter, one DC adapter and one padded carrying case*

3. Computer Software

230 *The Contractor shall provide software for the computer system in accordance with the minimum requirements listed below.*

- a. *Operating System Software – Windows XP Professional (no substitution)*
- b. *Productivity Software – Microsoft Office 2003 SP2 and Adobe Acrobat Professional*
- c. *Security Software – McAfee Virus Scan Plus*

240 *All software shall be the most current version and include the most current updates and patches at the time the computer system is provided to the Department. The Contractor shall provide for installation of updates and patches for the operating system, productivity and security software during the term of use of the computer system by the Department. Updates and patches shall be provided by an automatic update method. All installation media for the software and device drivers installed on the computer shall be provided to the Department during the term of use of the computer system.*

The Department may install and maintain proprietary software on the computer in order to run the Department's construction management programs.

250 ***4. Miscellaneous Computer Requirements***

The initial condition of the computer system shall be nearly pristine. All owner installed e-mail accounts, games, spyware, online services, applications, network or other profiles shall be set up on the system shall be removed prior to placement in the field office. If the system was provided for a previous Department contract, all software not specified shall be removed prior to placement in the current field office.

The Contractor shall provide an uninterruptible power supply (UPS), minimum 120 VA, 100 Watts and full time surge suppression for each field office computer system specified in the contract.

260 *The Contractor shall provide all cables, connections and software required to connect the field office computer system to the printer and the scanner.*

When more than one computer system is specified for a field office, the Contractor shall provide either an Ethernet or wireless office network to allow all computer systems in the field office to access the field office internet service, the printer and the scanner.

270 *The Contractor shall provide appropriate dust covers for all field office desktop computer systems.*

The Contractor shall provide all manuals necessary for operation of the computer system and software with the system and shall include all documentation normally furnished with the equipment and software when purchased.

The Department will be utilizing the computer system to run or access Department provided construction management software applications. These applications are known to run on Intel and AMD compatible equipment. If the Department experiences problems running these applications due to requirement

280 compatibility, the Contractor shall replace the equipment to ensure compatibility to the satisfaction of the Engineer within five business days.

The computer system shall be maintained in good working order. If a portion of the system becomes defective, inoperable, damaged, or stolen, that portion shall be repaired or replaced within five business days after the Contractor is notified by the Engineer. If the computer system and related accessories are not maintained by the Contractor as required, the Engineer may withhold partial payments until the computer system is operational to the Department's satisfaction.

290 **(d) Field Office Internet Service**

The Contractor shall provide broadband internet service for the field office. Broadband internet service shall be capable of a minimum average upload speed of 350Kbps unless otherwise approved by the Engineer.

(e) Field Office Machines

The Contractor shall provide a fully operational copier, printer, document scanner and fax machine for the Department's exclusive use in the field office in accordance with the minimum requirements listed herein.

300 **1. Copier**

The copier shall be a dry ink copier capable of using plain paper and of making full size, black and white copies of letter, legal and ledger size original documents. The copier shall be capable of reducing and increasing copy sizes. The copier shall have a self-feeding paper tray, an automatic document feeder and be capable of producing at least 12 copies per minute.

2. Printer

310 *The printer shall be a laser printer compatible with the computer system provided by the Contractor for use by the Department in the field office. The printer shall be capable of printing single-sided, black and white letter and legal size documents at a rate of 20 pages per minute and capable of automatic duplex printing.*

3. Document Scanner

The document scanner shall be compatible with the computer system provided by the Contractor for use by the Department in the field office. The scanner shall be capable of scanning letter and legal size documents and shall have an automatic document feeder and be capable of 24-bit color and 1200 dpi resolution.

4. Fax Machine

320 *The fax machine shall be connected to one of the required telephone service lines in the field office. The machine shall have an automatic document feeder with a 10 page capacity and be capable of faxing letter and legal size sheets. It shall be able to automatically dial 40 preprogrammed fax numbers and have the capability to program at least 2 groups of numbers. The machine shall have a 16 MB memory, shall be equipped with a telephone handset and be capable of automatic redial.*

In lieu of separate copier, printer, scanner and fax machines, the Contractor may provide an all-in-one unit that meets all of the individual requirements for the machines being provided.

5. Miscellaneous Office Machine Requirements

The Contractor shall provide letter, legal and ledger size paper, ink cartridges and toner as required by the Engineer for the operation of each piece of equipment provided.

If any office machine becomes defective, inoperable, damaged, or stolen, that machine shall be repaired or replaced within five business days after the Contractor is notified by the Engineer. If any of the office machines are not maintained by the Contractor as required, the Engineer may withhold partial payments until the machine is operational to the Department's satisfaction.

(f) Field Laboratory

The field laboratory shall be located as mutually agreed by the Engineer and the Contractor. The laboratory shall consist of an acceptable building or trailer in accordance with 628.02(a) in which the Department will house and use equipment to perform testing procedures for the contract.

The following equipment and supplies shall be furnished for each field laboratory of the type specified. The equipment and supplies shall meet the requirements of 628.02(a) as applicable.

Laboratory Type	A	B	C
Broom and Dust Pan	1	1	1
Six-hook Coat Rack	1	1	1
Toilet Facilities	Yes	Yes	Yes
Drinking Water	Yes	Yes	Yes
Fire Extinguishers	1	2	2
First-Aid Kit	1	1	1
Bloodborne Pathogen Kit	1	1	1
Smoke Detector	1	1	2
Carbon monoxide Detector	1	1	1
Doors	2	2	2
Windows	6	8	8
Shelving	16 lft (4.9 m)	20 lft (6.1 m)	24 lft (7.3 m)
Telephones	1	1	1
Voice Mail	1	1	1
Telephones Lines	1	1	1
File Cabinet Drawers	4	4	4
Office Desks & Office Chairs	1	1	1
Folding Office Tables	1	1	1
Chairs	2	2	2
Waste Paper Baskets	2	2	2
Cleaning Supplies	Yes	Yes	Yes

If a field office is provided that is large enough to include the required space for the laboratory, the Engineer may agree to accept the field office for use as both office and laboratory, in which case the equipment and supplies listed for the laboratory will not be required.

380 *If the field laboratory is a separate structure that is located directly adjacent to the field office, the toilet facilities, drinking water, telephones, voice mail/answering machine, telephone lines and cleaning supplies will not be required.*

628.03 Additional Computer Systems and Mobile Internet Service

When specified, the Contractor shall provide the following computer systems and internet services for the Department's exclusive use.

(a) Additional Field Office Computer System

390 *The additional field office computer system shall be either a desktop or laptop computer system in accordance with 628.02(c)1 or 628.02(c)2 except that the monitor for a desktop system may be a 19 in. flat panel and the external monitor for a laptop system will not be required. The requirements of 628.02(c)3 and 628.02(c)4 shall apply to each additional field office computer.*

(b) Mobile Laptop Computer System

400 *The mobile laptop computer system shall be in accordance with 628.02(c)2 except that the external monitor, integrated graphics card, external keyboard and port replicator with AC adapter will not be required. Mobile laptop computers will be used by the Department for contracts that do not include a field office. The requirements of 628.02(c)3 and 628.02(c)4 shall apply to each mobile laptop computer except that those requirements specifically for a field office computer will not apply.*

(c) Mobile Internet Service

The mobile broadband internet service access card will be used by the Department in a laptop computer provided by either the Contractor or the Department.

410 *The card shall connect to the laptop via a type II PC card slot, an express card slot or a USB 2.0 compliant port. The card and service shall be capable of a minimum average upload speed of 350 Kbps. The internet service rate plan shall include unlimited data and time usage with no roaming charge for national domestic use. All software necessary for the operation of the card shall be provided to the Engineer.*

The Contractor shall not purchase any card or enter into any service agreement until authorized by the Engineer. The Engineer will provide a minimum of 10 business days notice prior to the date the card will be required.

628.04 Method of Measurement

420 *Field office and field laboratory will be measured by the month for the specified type. Partial months will be rounded up to the next half or whole month. The Department will provide two weeks advanced notice prior to when the facility will be vacated.*

If a field laboratory is specified and is included in the same space as the field office, the field laboratory will not be measured for payment.

Additional field office computer system and mobile laptop computer system will be measured each.

Mobile internet service will be measured by the month. Partial months will be rounded up to the next half or whole month. The Department will provide two weeks advanced notice prior to when mobile internet service will no longer be required.

628.05 Basis of Payment

Field office and field laboratory will be paid for at the contract unit price per month, complete in place until released.

Additional field office computer system and mobile laptop computer system will be paid for at the contract unit price per each.

Mobile internet service will be measured by the month.

Payment will be made under:

Pay Item	Pay Unit Symbol
Field Office, _____ type	MOS
Field Laboratory, _____ type	MOS
Field Office Computer System, Additional.....	EACH
Mobile Laptop Computer System.....	EACH
Mobile Internet Service	MOS

The cost of all heating, cooling, electrical service, telephone service and other miscellaneous utility bills required for the field office or field laboratory shall be included in the cost of the field office or the field laboratory.

If a field office smaller than the specified type is approved by the Engineer, a new unit price will be established for the smaller field office. The new unit price will be equal to the original contract unit price multiplied by the smaller floor area and divided by the specified floor area.

If a temporary field office is provided in accordance with 628.02, payment will be 65% of the unit price during the time the temporary field office is in use by the Department.

The cost of all materials and labor necessary to setup, secure, maintain and remove the field office, including all required equipment and supplies and any material required to provide parking, shall be included in the cost of the field office.

All costs necessary to provide the field office computer system, including the required software, manuals, peripherals and related equipment, technical support and miscellaneous computer requirements shall be included in the cost of the field office.

All costs necessary to establish, install and maintain field office internet service, including any required hardware, software, fees, monthly charges, setup, installation and technical support shall be included in the cost of the field office.

480 *All costs necessary to provide the copier, printer, document scanner and fax machine, including setup, installation, all required connections to computer systems, technical support and miscellaneous office machine requirements shall be included in the cost of the field office.*

All costs necessary to establish and maintain a field office network when one or more additional field office computer systems are specified shall be included in the cost of the field office.

490 *All cost necessary to provide an additional field office computer system, including the required software, manuals, peripherals and related equipment and technical support shall be included in the cost of the additional field office computer.*

All costs necessary to provide the mobile laptop computer system, including the required software, manuals, peripherals and related equipment, technical support and miscellaneous computer requirements shall be included in the cost of the mobile laptop computer.

500 *All costs necessary to establish, install and maintain mobile internet service, including required hardware, software, fees, monthly charges, setup, installation and technical support shall be included in the cost of mobile internet service.*

PROPOSED NEW RECURRING SPECIAL PROVISION

628-R-XXX FIELD OFFICE, FIELD LABORATORY, COMPUTER SYSTEMS AND OFFICE MACHINES (CONTINUED).

Other sections containing
specific cross references:

None

Recurring Special Provisions
potentially affected:

105-C-071b, 105-C-207,
105-C-208, 105-C-216,
105-C-217

Motion: M
Second: M
Ayes:
Nays:

General Instructions to Field Employees

Update Required? Y___ N___

By - Addition or Revision

Frequency Manual

Update Required? Y___ N___

By - Addition or Revision

Standard Sheets potentially affected:

None

Action: Passed as submitted; revised

___ RSP Effective: _____ Letting

RSP Sunset Date: _____

___ RPD Effective: _____ Letting

___ 20__ Standard Specifications Book

___ 20__ Standards Edition

___ 20__ Design Manual

___ Technical Advisory

Withdrawn _____

Received FHWA Approval? _____

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: Box culvert information contained in 714 and in the recurring special provisions is outdated.

PROPOSED SOLUTION: Incorporate two longstanding recurring special provisions into the 714 section, rework this section to address all box culverts (oversize & regular size), and update the requirements that the box culverts be designed using LRFD methods.

APPLICABLE STANDARD SPECIFICATIONS: 714, 907.02, 907.05, 907.06, 910.01(b)5, 910.01(b)6, 910.01(b)10

APPLICABLE STANDARD DRAWINGS: 714-BCEX-01 & -02

APPLICABLE DESIGN MANUAL SECTION: New Section 31-4.05

APPLICABLE SECTION OF GIFE: new GIFE section 714

APPLICABLE RECURRING SPECIAL PROVISIONS: this proposal incorporates RSP 714-R-437 and 735-R-468 into the Standard Specifications

Submitted By: Anne Rearick

Title: Manager, Structural Services

Organization: INDOT

Phone Number: 317-232-5152

Date: March 18, 2008

APPLICABLE SUB-COMMITTEE ENDORSEMENT? 700 Specification Subcommittee

PROPOSED NEW RECURRING SPECIAL PROVISION

714-R-XXX CONCRETE BOX STRUCTURES

(Adopted XX-XX-XX)

The Standard Specifications are revised as follows:

SECTION 714, DELETE LINES 1 THROUGH 146.

SECTION 714, AFTER LINE 147, INSERT AS FOLLOWS:

SECTION 714 – CONCRETE BOX STRUCTURES

150

714.01 Description

This work shall consist of the construction of cast-in-place or precast concrete box drainage structures with 20 ft (6.1 m) span or less as measured along the roadway centerline, and such parts of similar structures composed of concrete in accordance with these specifications and 105.03.

714.02 Materials

Materials shall be in accordance with the following:

160

<i>Bituminous Mastic Pipe Joint Sealer</i>	<i>906.05</i>
<i>Chemical Anchor System.....</i>	<i>901.05</i>
<i>Coarse Aggregates, Class A or Higher, Size No. 91.....</i>	<i>904</i>
<i>Concrete</i>	<i>702</i>
<i>Flowable Backfill</i>	<i>213</i>
<i>Geotextile</i>	<i>918.02</i>
<i>Joint Membrane System for Precast Reinforced</i>	
<i> Concrete Box Section.....</i>	<i>906.06</i>
<i>Precast Reinforced Concrete Box Sections.....</i>	<i>907.05</i>
<i>Precast Reinforced Concrete Headwalls and Wingwalls</i>	<i>907.06</i>
<i>Reinforcing Bars</i>	<i>910.01</i>
<i>Steel Welded Wire Reinforcement, Smooth and Deformed....</i>	<i>910.01</i>
<i>Sealer.....</i>	<i>909.09 or 909.10</i>
<i>Structure Backfill</i>	<i>904</i>

170

Cast-in-place concrete for wingwalls and headwalls shall be class A. Concrete for cast-in-place splices between an existing culvert and a precast reinforced-concrete box section extension or used to seal existing culverts shall be class A. Cast-in-place concrete for footings shall be class B.

CONSTRUCTION REQUIREMENTS

180

714.03 General Requirements

Unless otherwise specified, the applicable requirements of 702 and 703 shall apply to the construction of box structures, box-structure extensions, and concrete parts of similar structures. Excavation and disposal shall be in accordance with the applicable requirements of 206. The areas designated for waterproofing shall be waterproofed in accordance with 702.23. All underground drains encountered during excavation for the

structure shall be perpetuated as dictated by field conditions. Drainage openings through masonry shall be in accordance with 702.16. Handling of box structures shall be in accordance with 907.05. Handling of wingwalls shall be in accordance with 907.06.

190

714.04 Design Requirements

(a) Box Sections

A box section shall be designed in accordance with ASTM C 1577 except that the area of reinforcement shall be in accordance with this section.

The box section shall be designed for HL-93 plus impact loading, in accordance with AASHTO Load Reduction Factor Design, LRFD Bridge Design Specifications.

200

Shop drawings shall be submitted in accordance with 105.02 for fabrication of a precast reinforced-concrete box structure greater than 12 ft. (3.6 m) span, or box culverts of a size not described in ASTM C 1577, or for precast-concrete headwalls, or wingwalls. The shop drawings for a precast reinforced-concrete box structure shall include all details, dimensions, and quantities necessary to construct the structure, and shall include, but not be limited to, structure section details showing all concrete dimensions and reinforcing bar requirements.

Detailed plans for falsework and centering will not be required.

210

If the structure is specified as having epoxy coated reinforcing, all top slab reinforcing defined as As2, As5, As6, and As7 in ASTM C 1577 in that structure shall be epoxy coated.

Minimum structural reinforcement area shall be at least 0.002 of the gross concrete area A_g or 0.125 in.²/ft (265 mm²/m), whichever is greater. The permissible variation in diameter of reinforcement shall be in accordance with the tolerances prescribed in the AASHTO specification for that type of reinforcement.

220

The minimum thickness of top slab, bottom slab, and sidewalls, shall each be 12 in. (300 mm) for structure sections greater than 12 ft. (3.6 m) span. Haunch dimensions shall be as described in ASTM C 1577.

Reinforcing bar splicing and spacing requirements shall be in accordance with the AASHTO LRFD Bridge Specifications, except as indicated herein. The concrete cover over the circumferential reinforcement shall be 1 in. (25 mm). However, for a box culvert with cover less than 2.0 feet (600 mm) in the outside top of the top slab it shall be 2 in. (50 mm).

(b) Precast-Concrete Headwalls and Wingwalls

230

Headwalls and wingwalls shall be designed based on a minimum equivalent fluid pressure of 40 lb/ft³ (6.3 kN/m³). If flowable backfill is to be used, the Contractor shall consider the effects of hydrostatic pressure on the wingwalls. Horizontal pressures shall be increased for sloping backfill surfaces and live-load surcharge. Footings shall be designed for the allowable soil bearing shown on the plans. Wingwalls and wingwall footings shall be designed in accordance with the soil parameters shown on the plans. Headwall connections and wingwall footings shall be checked for sliding and for

240 *overturning. A headwall with bridge railing mounted on top and the anchorage of the headwall to the box-structure section shall be designed for the bridge railing test level shown on the plans. Concrete cover for headwall and wingwall reinforcement shall be a minimum of 2 in. (50 mm). Concrete cover for footing reinforcement shall be 3 in. (75 mm) for the top and sides, and 100 mm (4 in.) for the bottom.*

All reinforcing in headwalls shall be epoxy coated. Reinforcing bar splicing and spacing requirements shall be in accordance with the AASHTO LRFD Bridge Specifications, except as described herein. The maximum spacing for wingwall reinforcing bars shall be 18 in. (450 mm) for horizontal bars and 12 in. (300 mm) for vertical bars.

250 *Shop drawings shall be submitted in accordance with 105.02 for fabrication of precast-concrete headwalls, or wingwalls. Shop drawings for precast-concrete headwalls and wingwalls shall include, but not be limited to, the following information.*

1. *Footing details showing all concrete dimensions, elevations, and reinforcing sizes, reinforcing bending diagrams, lengths, and spacings indicated. Footing plan and section views shall be provided. The actual soil bearing pressure shall be shown on the footing-details sheets.*
- 260 2. *Design computations which show the effects of hydrostatic pressure on the structure.*
3. *Wingwall design computations and details showing all concrete dimensions, reinforcing bars, bar-bending diagrams, and anchorage details. Wingwall plan, elevation, and section views shall be provided.*
4. *Headwall details, showing all concrete dimensions, reinforcing bars, bar bending diagrams, and anchorage details. Headwall elevation and section views shall be provided.*
- 270 5. *Wingwall backfill type and limits.*

714.05 Erection Requirements

The soils in the bottom of the excavation shall be compacted in accordance with 715.04.

280 *Where a precast footing is utilized, a 4-in. (100-mm) layer of coarse aggregate No. 53 in accordance with 301 shall be placed under the full width of the footing. All cast-in-place footings shall be given a smooth float finish. The footing concrete shall reach a compressive strength of 2,000 psi (13 800 kPa) or flexural strength in accordance with 702.24(c) before placement of the wingwalls. The surface shall not vary more than 1/4 in. in 10 ft (6 mm in 3 m) if tested with a 10 ft (3 m) straightedge.*

Tapered handling holes shall be filled with material in accordance with 901.07 or 901.08 or with precast concrete plugs, which shall be secured with portland cement mortar or other approved adhesive, before backfilling. Drilled handling holes shall be

filled with portland cement mortar. Prior to backfilling, all holes shall be covered with joint wrap material with a minimum width of 9 in. (225 mm).

290 Structure backfill shall be placed and compacted in accordance with 211, or flowable backfill shall be placed in accordance with 213, as required. Backfill material shall be brought up uniformly on each side of the structure to the fill line shown on the plans.

The operation of equipment over a structure shall be in accordance with the structure manufacturer's recommendations.

714.06 Precast-Concrete Headwalls and Wingwalls

(a) Headwall Reinforcement Placement Relative to Top of Structure

300 The vertical headwall reinforcement shall be attached to the top of the structure by either drilling holes or precasting holes. A chemical anchoring material, if used, shall be one from the Department's List of Approved Chemical Anchoring Materials.

(b) Wingwall Placement

Each wingwall shall be set on either masonite or steel shims. A minimum gap of 0.5 in. (13 mm) shall be provided between the footing and the bottom of each wingwall. The gap shall be filled with a mortar in accordance with 707.09. Wingwalls shall be connected to the outside box-structure sections with bolted steel plates.

(c) Wingwall Repairs

310 Wingwalls shall be repaired, if necessary, due to imperfections in manufacture, or damage caused by handling or construction. Repairs will be acceptable if it is determined that the repairs are sound, properly finished and cured, and if the repaired wingwall is in accordance with the requirements herein.

(d) Sealing

320 Sealer shall be applied in accordance with 709 on the top surfaces of headwalls and wingwalls. It shall extend 5 ft (1.5 m) vertically down the face of each section or to the bottom of each section, whichever is less. Surface preparation and application procedures shall be as recommended by the sealer manufacturer.

714.07 Extension of Existing Structure

All pertinent requirements of this specification shall apply to extension of an existing box structure, slab-top structure, or arch structure. Such portions of the existing structure designated for removal shall be removed. All portions of the existing structure which are to remain in place and are damaged shall be repaired or replaced as directed. Those portions left in place which are wholly or partially filled with debris shall be cleaned out. Material removed shall be disposed of in accordance with the applicable requirements of 202.02.

330 All existing reinforcing steel exposed after concrete removal shall be cleaned and straightened in preparation for lapping with reinforcement from adjacent new work. Where existing reinforcing steel has deteriorated or been damaged during the removal operation, holes shall be drilled into the face of the existing structure to provide embedment for replacement reinforcing bars. The holes shall be of the diameter and

length shown on the plans or as directed and shall be cleaned prior to placement of the reinforcement and an approved chemical anchor system.

An existing structure shall be extended by one of the following methods.

(a) Precast Concrete Box Section Extension

A cast-in-place concrete splice shall be constructed as a transition between the existing structure and the precast extension. The splice reinforcement shall be lapped with the exposed existing structure reinforcing steel and with exposed reinforcing mesh from the extension as shown on the plans.

(b) Cast-In-Place Concrete Structure Extension

The reinforcing bars for the extension shall be directly lapped with the exposed reinforcement of the existing structure as shown on the plans.

714.08 Precast Reinforced-Concrete Box Section Joints

Precast reinforced-concrete box section joints shall be sealed as shown on the plans. A bituminous mastic pipe joint sealer system or self-adhering joint membrane systems shall be applied once the concrete surface temperature is above 40°F (5°C) or sufficient to allow adherence. The concrete surfaces shall be cleaned and dry prior to application of the mastic or membrane material. Heat may be applied to the concrete surfaces until they are in accordance with the temperature and dryness requirements. The mastic or membrane material shall be centered on both sides of the joint as it is being applied. After application, the geotextile or membrane material shall be rolled to avoid wrinkling. If the roll of geotextile or membrane material does not cover the full length of the joint, an overlap of at least 2 1/2 in. (65 mm) will be required to start the next roll of material. The manufacturer's application instructions shall apply in addition to the above requirements.

714.09 Abandoning Existing Structure

If an existing structure is no longer needed, but does not require removal, it shall be filled with non-removable flowable backfill in accordance with 213. Existing headwall removal shall be as shown on the plans or as directed.

714.10 Method of Measurement

Precast reinforced concrete box sections, precast epoxy coated reinforced concrete box sections, precast reinforced concrete box section extensions, and precast epoxy coated reinforced concrete box section extensions will be measured by the linear foot (meter), complete in place. Precast concrete headwalls and wingwalls will be measured by the square foot (square meter).

Cast-in-place concrete used in structures and structure extensions will be measured in accordance with 702.27. Reinforcing bars and epoxy coated reinforcing bars will be measured in accordance with 703.07. Structure backfill will be measured in accordance with 211.09. Flowable backfill will be measured in accordance with 213.08. Field-drilled holes will be measured in accordance with 702.27.

714.11 Basis of Payment

The accepted quantities of cast-in-place concrete used in structures and structure extensions will be paid for at the contract unit price per cubic yard (cubic meter) for

concrete, of the class specified, structures. Precast reinforced concrete box sections of the size specified will be paid for at the contract unit price per linear foot (meter). Precast epoxy coated reinforced concrete box sections of the size specified will be paid for at the contract unit price per linear foot (meter). Precast reinforced concrete box section extensions and precast epoxy coated reinforced concrete box section extensions of the size specified will be paid for at the contract unit price per linear foot (meter). Precast-concrete headwalls and wingwalls will be paid for at the contract unit price per square foot (square meter).

Reinforcing bars, plain or epoxy coated, will be paid for in accordance with 703.08. Geotextile or riprap will be paid for in accordance with 616.13. Structure backfill will be paid for in accordance with 211.10. Flowable backfill will be paid for in accordance with 213.09. Field-drilled holes will be paid for in accordance with 702.28.

Payment will be made under:

Pay Item	Pay Unit Symbol
Concrete, _____, Structures..... class	CYS (m3)
Concrete Structure Extension, Precast Reinforced Concrete Box Sections, _____ ft (mm) x _____ ft (mm)..... span rise	LFT (m)
Concrete Structure Extension, Precast Epoxy Coated Reinforced Concrete Box Sections, _____ ft (mm) x _____ ft (mm)..... span rise	LFT (m)
Headwall	SFT (m2)
Structure, Precast Reinforced-Concrete Box Sections, _____ ft (mm) x _____ ft (mm)..... span rise	LFT (m)
Structure, Precast Epoxy Coated Reinforced Concrete Box Sections, _____ ft (mm) x _____ ft (mm)..... span rise	LFT (m)
Wingwall	SFT (m2)

The cost of excavation except as provided in 206.11(a), expansion joint material, perpetuation of existing drains shown on the plans, filling of existing structures, removal of existing structures, removal of portions of existing structures, cleaning out old channels or structures, approved chemical anchor system, precast reinforced concrete structure joints, and necessary incidentals shall be included in the cost of the pay items in this section.

The cost of designing a box structure shall be included in the cost of the pay items of this section.

The costs of coring, testing, reinforcing bars, excavation, repairs, plugging core and handling holes, mortar, sealer, and necessary incidentals shall be included in the cost of headwall or wingwall. The cost of wingwall footing and the aggregate base under such footing shall be included in the cost of wingwall.

No additional payment will be made for carrying an underground drain through a structure or structure extension. However, no deduction will be made for the volume of concrete occupied by the drain pipe in a cast-in-place structure or structure extension.

- 440 *No additional payment will be made for the repair or replacement of existing concrete damaged by Contractor operations.*

SECTION 907, BEGIN LINE 9, INSERT AS FOLLOWS:

907.02 Reinforced Concrete Pipe

This pipe shall be in accordance with AASHTO M 170 (M 170M) for the specified diameters and strength classes. *Precast concrete units shall be from a source listed in the Department's List of Certified Precast Concrete Producers, in accordance with ITM 813.* Unless otherwise specified, pipe wall design and use of elliptical reinforcement in circular pipe are optional.

The pipe provided shall be in accordance with the class and D-load rating shown in the plans.

When the pipe listed below is specified or permitted, it shall be in accordance with the class noted.

Extra Strength Reinforced Concrete Pipe	Class IV
Heavy Duty Reinforced Concrete Pipe	Class V
Reinforced Concrete Pipe	Class III
Reinforced Concrete Sewer Pipe	Class II

SECTION 907, BEGIN LINE 67, DELETE AND INSERT AS FOLLOWS:

907.05 Precast Reinforced Concrete Box Sections

~~Box sections with 2 ft (0.6 m) of cover or greater shall be in accordance with AASHTO M 259 (M 259M) and box sections with less than 2 ft (0.6 m) of cover which are subject to highway loadings shall be in accordance with AASTHO M 273 (M 273M). Box sections furnished in accordance with AASHTO M 259 (M 259M) or AASHTO M 273 (M 273M) shall have a minimum 28 day compressive strength of 5,000 psi (34.5 MPa), as determined by concrete cores. Certification shall be in accordance with 907.02.~~

Precast concrete units shall be in accordance with ASTM C 1577 and shall be from a source listed in the Department's List of Certified Precast Concrete Producers, in accordance with ITM 813.

Not more than four holes may be cast or drilled, or otherwise neatly made in the shell of each piece of box section for the purpose of handling or laying. The holes shall be tapered unless drilled, ~~cored and the tapered holes shall be filled with portland cement mortar or with precast concrete plugs, which shall be secured with portland cement mortar or other approved adhesive, before backfilling. Drilled holes shall be filled with portland cement mortar.~~

907.06 ~~Blank~~ Precast Reinforced Concrete Headwalls and Wingwalls for Box Structure or Three-Sided Structure

Precast concrete units shall be from a source listed in the Department's List of Certified Precast Concrete Producers, in accordance with ITM 813.

Handling devices or holes will be permitted in each wingwall section. Not more than four holes shall be cast or drilled in each section for the purpose of handling or setting. The holes shall be tapered unless cored. Weep holes shall be provided in all wingwalls. Wingwalls shall be free of fractures and shall be given a finish in accordance with 702.21.

The concrete compressive strength for headwalls and wingwalls shall have a minimum 28-day compressive strength of 4,000 psi (27.6 MPa), as determined by compressive strength testing of concrete cylinders.

Structural steel used in bolted connections of headwalls or wingwalls to a box-structure section, or of wingwalls to a three-sided-structure section or spandrel wall, shall be in accordance with 910.02(a), and zinc coated after fabrication in accordance with ASTM A 153.

Bolts and studs shall be hot dipped in accordance with 910.02(g)1. Nuts shall be in accordance with ASTM A 563, Grade A, Hex style; unless specified otherwise. Washers shall be in accordance ASTM F 844, unless specified otherwise. Bolts, nuts and washers shall be hot dip zinc coated.

SECTION 910, BEGIN LINE 45, DELETE AND INSERT AS FOLLOWS:

~~5. Welded Steel Wire Fabric for Concrete Reinforcement~~

~~Welded smooth steel wire fabric for concrete reinforcement shall be in accordance with ASTM A 185, except as follows.~~

- ~~a. The wire used in manufacturing the fabric shall be as drawn, not galvanized, unless otherwise specified.~~
- ~~b. The fabric shall be furnished in flat sheets unless otherwise permitted or specified.~~
- ~~c. Weld shear tests of fabric will be performed on the test specimens obtained for testing tensile properties in accordance with the Frequency Manual. If there is weld shear failure, additional test specimens shall be obtained in accordance with ASTM A 185.~~

~~6. Welded Deformed Steel Wire Fabric for Concrete Reinforcement~~

~~Welded deformed steel wire fabric for concrete reinforcement shall be in accordance with ASTM A 497, except as follows.~~

- ~~a. The wire used in manufacturing the fabric shall be in accordance with ASTM A 496.~~
- ~~b. The fabric shall be furnished in flat sheets unless otherwise specified or permitted.~~

- ~~c. Weld shear tests of fabric will be performed on the test specimens obtained for testing tensile properties in accordance with the Frequency Manual. If there is shear failure, additional test specimens shall be obtain in accordance with ASTM A 497.~~

5. Steel Welded Wire Reinforcement, Smooth

Smooth steel welded wire reinforcement shall be in accordance with ASTM A 185, except as follows.

- a. The wire used in manufacturing the welded wire reinforcement shall be as drawn, not galvanized, unless otherwise specified.*
- b. The welded wire reinforcement shall be furnished in flat sheets unless otherwise permitted or specified.*
- c. Weld shear tests of welded wire reinforcement shall be performed by the manufacturer on the test specimens obtained for testing tensile properties in accordance with the Frequency Manual. If there is weld shear failure, additional test specimens shall be tested in accordance with ASTM A 185.*

6. Steel Welded Wire Reinforcement, Deformed

Deformed steel welded wire reinforcement shall be in accordance with ASTM A 497, except as follows.

- a. The wire used in manufacturing the welded wire reinforcement shall be in accordance with ASTM A 496.*
- b. The welded wire reinforcement shall be furnished in flat sheets unless otherwise specified or permitted.*
- c. Weld shear tests of welded wire reinforcement shall be performed by the manufacturer on the test specimens obtained for testing tensile properties in accordance with the Frequency Manual. If there is shear failure, additional test specimens shall be tested in accordance with ASTM A 497.*

SECTION 910, BEGIN LINE 146, DELETE AND INSERT AS FOLLOWS:

10. Dowel Bars

~~Dowel bars shall be plain billet steel in accordance with ASTM A 615, grade 40 (A 615M, grade 280), except the bend test and elongation requirements will not apply. The dowel bar area and weight (mass) for the nominal bar diameter shall be as follows~~

Dowel bars shall be in accordance with AASHTO M 254 and the metal core in accordance with AASHTO M 255, grade 60 (420). The dowel bar area and weight (mass) for the nominal bar diameter shall be as follows.

PROPOSED NEW RECURRING SPECIAL PROVISION

714-R-XXX CONCRETE BOX STRUCTURES (CONTINUED).

Nominal Bar Diameter, in. (mm)	Cross Sectional Area, in. ² (mm ²)	Weight (Mass) lb/ft (kg/m)
1 (25)	0.79 (510)	2.670 (3.973)
1 1/4 (32)	1.23 (794)	4.172 (6.209)
1 5/16 (33)	1.35 (871)	4.600 (6.846)
1 1/2 (38)	1.77 (1142)	6.008 (8.941)

Dowel bars shall be coated with an epoxy coating material selected from the list of approved Epoxy Coating for Steel. The coating thickness after cure shall be a minimum of 7 mils (175 µm). Dowel bars shall not have burring or other deformation restricting slippage in concrete. Dowel bar ends shall be saw cut. Chips from the cutting operation shall be removed from coated bars.

Dowel bars shall be furnished by selecting bars made by a coater and manufacturer on the list of approved Certified Reinforcing Bar Epoxy Coaters and in accordance with ITM 301. When shipped to the project site, the dowel bars shall be accompanied by the types of certifications specified in ITM 301 and in accordance with 916.

Other sections containing
specific cross references:

General Instructions to Field Employees
 Update Required? Y___ N___
 By - Addition or Revision
 Frequency Manual
 Update Required? Y___ N___
 By - Addition or Revision

Recurring Special Provisions
potentially affected:

Standard Sheets potentially affected:

714-R-437
 735-R-468

714-BCEX 01 & 02

Motion: M
 Second: M
 Ayes:
 Nays:

Action: Passed as submitted; revised
 ___ RSP Effective: _____ Letting
 RSP Sunset Date: _____
 ___ RPD Effective: _____ Letting
 ___ 20__ Standard Specifications Book
 ___ 20__ Standards Edition
 ___ 20__ Design Manual
 ___ Technical Advisory

Withdrawn _____

Received FHWA Approval? _____

Item No. 08-9-4

Ms. Rearick

Date: 4/17/08

REVISION TO STANDARD DRAWINGS

714-BCEX-01 Precast Box Culvert Extension

714-BCEX-02 Extension in Kind for Box Culvert

Other sections containing
specific cross references:

None

Recurring Special Provisions
potentially affected:

714-R-437
735-R-468

Motion: M
Second: M
Ayes:
Nays:

General Instructions to Field Employees

Update Required? Y___ N___

By - Addition or Revision

Frequency Manual

Update Required? Y___ N___

By - Addition or Revision

Standard Sheets potentially affected:

See Above

Action: Passed as submitted; revised

___ RSP Effective: _____ Letting

RSP Sunset Date: _____

___ RPD Effective: _____ Letting

___ 20__ Standard Specifications Book

___ 20__ Standards Edition

___ 20__ Design Manual

___ Technical Advisory

Withdrawn _____

Received FHWA Approval? _____

